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Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Total School Energy Management Program

March 1980

Prepared by:
Energy Education Programs
Woodstock, Illinois
Contract No. EU-R-02-0012

Prepared for:
U.S. Department of Energy
Office of Consumer Affairs
Washington D.C. 20585

a part of our technological world.

The educational specialization, industrialization, and mechanization which has enabled small segments of society to supply goods and services for the rest lead to the necessary use of great amounts of energy in supplanting human labor.

You are confronted with the word "energy" so many times, and in so many ways these days, that as an administrator at any of our institutions of public education you may be tempted to:

- (1) Toss this package--you are already well along the road to saving energy in your district.
- (2) Toss this package--you are already advising your staff to turn off lights, carpool, and ease up on the use of office coffeepots.
- (3) Toss this package--you are offering workshops and courses on energy already and don't want any help.
- (4) Toss this package--everybody knows that the energy crisis was a political trick anyway.

And really, no one could blame you. "Energy" awareness, conservation, prices and sources are as complex and little understood issues as any that we have faced in the history of our nation. In the long run though, our determination to understand these issues, and to manipulate their relationship to our own best advantage, has brought about our dominance in many areas of world affairs today. But do you, does your district, and the people who contribute the dollars to keep it in operation, really understand how ability to use and manage energy wisely relates to institutional (or community) success?

No question, most industries and many school districts understand this relationship. They have taken the lead in making energy conservation improvements on site.

for the real business of education--jobs, materials, and programs. They realize that, unlike any other segment of the economy, public schools cannot simply pass along higher fuel costs to the consumer. Professionalism in managing the business of education means paying attention to energy conservation.

The measures which have been taken--and those yet to be taken--are a long way from token approaches like turning off the coffeepot and keeping the hallways dimly lit. Effective programs are going to require some of the creative, independent "I will" spirit that has made America what it is. If our institutions of public education are going to survive in times to come--survive, that is, in anything resembling the form that we have come to value, it is up to administrators to take a hard, creative look at institutional planning and energy dynamics. Here is a maze of problems that can challenge and stimulate virtually every administrative unit of your district--academic, support, maintenance, students, and alumni. Best of all, you can be sure that virtually any effort will mean payback for the school.

This package is intended to give you some ideas about how to get started. If nothing else, it should make it absolutely clear to you that there is no one "right way" to get going on energy conservation. The creative uses of energy are what have made our "convenience" living possible. Conservation is really a refocusing of that same inventive creativity: how can we make our style of living even more convenient, more enjoyable, while at the same time less expensive? This is really what public education is best equipped to do: study, demonstrate, and develop ideas and tools that will enhance our quality of life. Every institution, of whatever size or status, can contribute to this national effort.

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This guide has been prepared by Energy Education Programs of Woodstock, Illinois under contract no. EU-78-R-02-0012 for the United States Department of Energy.

The authors wish to thank Mr. Don Duggan, Branch Chief of DOE AEC Programs for assistance and support. His concern that this manual be a valuable and motivational tool for administrators, teachers, and other personnel has guided us throughout the course of the project.

This guide was reviewed by a number of professionals in the fields of energy, engineering, transportation, and education for content and practical application. The dialogue with and written critiques by reviewers have greatly assisted in the resolution of many concepts dealt with in this guide.

In particular we would like to express our appreciation to Ed L. Lutz, Art Instructor, Woodstock, Illinois, Richard Pace, Principal, Northwood High, Woodstock, Illinois, James Hecht and Lyle Johnson, Board of Education Members, Woodstock, Illinois, Shirley Hansen, Associate Director, American Association of School Administrators, and Allen Schmieder, Chief of Energy Programs, U.S. Office of Education.

A special expression of gratitude must be extended to Deborah E. Egan. Without her technical assistance, this project could not have been completed.

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What follows is a brief overview of the situation you are faced with and what you can do about it.

Our first job--understanding

As you assume a position of leadership in this important task, one of the first things you must do is understand the problem.

Statistics abound on the "big picture" of energy use in the United States. We needn't go into that here. If you are interested in "boning up" on the millions of Btu's, gallons, therms, etc., used, there are plenty of sources.

What you need to have is a basic understanding of "energy flow" in your own buildings and systems under your supervision-just as you have to have a good understanding of cash flow.

Energy is not as elusive as you think.

Actually, it is easier to understand than money these days; given the confusing world of foreign exchange rates, inflation, etc., it is hard to define what a dollar is. But you can relate to a dollar as a convenient unit of measure and in terms of what it does - i.e., what it buys.

You can look at energy units in the same way-whether you call the units Btu's, gallons, kilowatts, or whatever. A unit of energy will "buy" you a certain result-miles travelled in a car or bus, enough heat to keep a building at 68°, etc.

To get an idea or perspective on how energy units are "spent", consider:

- * a school bus will use 2½ gallons or 312,500 Btu's of energy to travel 10 miles.
- * a 30 foot by 30 foot classroom built to typical 1950's-early 60's construction standards requires 23,500 Btu's per hour to keep the indoor temperature at 68° when it is 20° outside, if operating at 75% energy efficiency,
- * a six-burner commercial gas range will use about 2.52 therms of gas over a four-hour day in cooking meals in the cafeteria.
- * eight hours of fluorescent lighting in a building of ten classrooms

using typical average fuel rates across the United States:

- * one gallon of fuel oil = \$.55
- * one therm of natural gas = \$.22
- * one kilowatt-hour of electricity = \$.04

or

- * one million Btu's supplied by fuel oil = \$3.93
- * one million Btu's supplied by natural gas = \$2.20
- * one million Btu's supplied by electricity = \$11.72

Now that you have equated energy with dollars, what is next?

As a school administrator, you have a unique problem. Unlike manufacturers or retailers, you cannot pass along higher costs to the consumer. You have to perform the basic and critical task of providing quality education within a limited budget. If the cost of energy rises, the reality is that the amount of dollars available for hiring top teachers, for textbooks, and for equipment, will likely drop. Your challenge as a professional is to handle that situation.

By thinking of energy as you do money, you can apply professional management techniques to energy without being an engineer or technician.

This program is intended to help you apply such techniques to energy. For example; the package is intended to point the way to helping you to:

- Look at what you are doing now and divide it into specific energy tasks.
- See what you are "spending" in these tasks.
- Check out new ways to perform these tasks that require you to "spend" less energy and still get the job done.
- Choose the best way-in terms of money cost, time cost, and energy cost.
- Educate your own personnel in the operations and practices necessary to implement the method chosen.

It is not necessary for you to become an overnight expert on how systems work, what the most efficient ranges are, or how lighting control systems function.

You have operating and maintenance people on your staff to do the work for you.

Your next job--commitment

As with any successful program, a most significant step is making a commitment.

If saving money for education by saving energy is important to you.

If fulfilling your role as community leader is important to you.

You should be able to find the will and desire to commit to an energy management program.

Of course, the depth of a commitment is proportional to the complexity of the task. If you feel like you are getting in over your head, you may not want to make a commitment.

That is why this program has been designed to make it relatively easy for you.

What you can do

Be a better energy manager.

Part of your job is to spend your community's tax dollars wisely. Use talented personnel, materials, equipment . . . and energy.

To be a better manager, you are going to have to start thinking about energy as you think about money.

Think of "Btu's" as dollars.

In fact, especially with today's fuel costs, energy is money.

Think of how you manage money.

If you use "zero base budgeting", you approach the allocation of funds pretty much as follows:

or superfluous to your overall goal

- * examine different methods (procedures, equipment, and supplies) required to perform the task.
- * choose the most cost-efficient method that will get the job done
- * set a budget for that method and educate people involved in implementation

You need to think the same way about energy, too.

And you can. True, you can't "see" energy-but you can't "see" money either. Both are numbers on a ledger sheet. And you as a manager can be a professional in managing both.

Be a better community leader.

Like it or not, you are on display.

The actions you take or don't take affect countless others in the educational community as well as in the community at large. People in general look to you for guidance and wisdom-and in most cases trust your judgment.

As an educational leader you are in a unique position to cause significant changes in social attitudes toward energy use.

-Your institution can become a forum for discussion of ideas, concepts, and technologies. This is not revolutionary, just exciting. Better awareness of energy sources and uses on the part of your students not only will lead to their being better informed citizens who can and will make reasonable but effective lifestyle adjustments, but also will filter into the community as a whole.

-Your facilities can become a model of conservation that, through appropriate publicity, the rest of your community can follow.

* curriculum

Each group can have a significant impact on energy management throughout the school setting.

And, importantly, each can have a significant impact outside educational setting.

Each area can be logically subdivided into specific areas or audiences, too.

So the apparently incomprehensible task can be broken down in manageable segments on which you can have an effect.

As with a monetary budget, wise practices in each area can add significant impact overall.

The keys are awareness, commitment, and organization.

These materials will help you.

The Energy Management Program

This energy management program is composed of four elements

- (1) First is an Implementation Guide, which provides you with options and step-by-step approaches for marshalling your resources and organizing to get a program off the ground. Covered are answers to questions such as:

- Whose cooperation do I need up and down the line and how do I get it?
- Who on my staff can handle specific responsibilities?
- How can I organize people and assign tasks to best the job at hand?
- What goals should I set and in what priority?
- What incentive, motivational, and reinforcement techniques can I employ?
- What information do I need and how do I get it?
- How can I publicize the program to achieve wider

effectiveness of the program, included are general approaches for identifying energy-related concepts and bringing the topic of energy into existing curriculum. There are suggestions for analyzing your current curriculum from an "energy viewpoint" as well as forms to record areas of strengths and weaknesses. Directions are given for selecting energy related educational materials and for introducing energy to your staff so that they will want to become involved.

- (3) Third is a guide for Facilities Management which includes technical steps you and your staff can take. These include:
- Determining your history of energy use in order to arrive at a realistic savings goal.
 - Conducting a "mini-audit" survey of the school to pinpoint maintenance needs and opportunities for energy savings.
 - Evaluating and prioritizing various energy saving opportunities uncovered in your survey.
 - Preparing an energy saving action plan.
 - Introducing the concept of the maxi-audit.
- Worksheets and audit forms are included for your convenience.

Suggested steps are organized according to:

- Whether they are "quick-fix", low budget corrective "retrofits", or conversions involving capital expenditures.
- Whether they involve energized systems (mechanical devices), passive systems (building structure), or human systems (operating and maintenance).

portation systems.

Materials are organized in such a way and provided in such a format to enable you to exercise maximum flexibility. Nothing is prescribed.

You can choose a few, many, or all of the elements outlined to tailor a program to fit your budget, time, responsibilities, and commitment.

(5) Fifth is an appendix which lists a number of DOE publications on energy conservation for school buildings.

GENERAL IMPLEMENTATION GUIDE
ELEMENTARY/SECONDARY LEVEL

By this time you have probably decided whether or not you are going to set up a conservation program.

The task really isn't as formidable as it may appear.

Energy conservation is actually a clear and well-defined challenge . . . in fact, a much better defined challenge than many which you face. The needs are obvious, and the physical or technical solutions are prescribed and tested. The major ingredients, then, are commitment, organization, communication, and motivation . . . typical responsibilities of management. The pieces of the "puzzle" are lying about within easy reach. All you have to do is put them together.

This program is designed so that the "nuts and bolts" details of implementation can be parcelled out among your staff in small, manageable pieces.

Also, you will be able to implement as much or as little of the program as you wish at any one time. Thus you will always have control of the scope and depth of your efforts.

Since anything is easier when broken down into smaller logical steps, the General Implementation Guide gives you some approaches on how to do just that in the way of planning, organizing, and following your program. Regardless of whether you happen to be a district superintendent, business manager, school principal . . . or whoever . . . there are certain steps you can take in your own area of responsibility. This guide should help you identify some of the basic preliminaries you should consider as well as those persons whose cooperation must be sought, (either from an approval or task assignment standpoint). Obviously, as you read this guide, you should superimpose your own situation and position in determining what goals to set and in identifying who must work with you and in what capacity. For those to whom you report, your preliminary work will be to gain approval and/or budget allocation. The degree of necessity for this will vary according to your own local situation and according to how ambitious a program you intend to undertake. For those who report to you, your preliminary work will be used to assign tasks in such a way as to be